Animal Health Monitor

FEBRUARY 2013

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Final Results of the BC Johne's Disease Project by Dr. Brian Radke

Growing Forward is the federal-provincial partnership that funded this project to test BC cattle that were over 18 months of age for Johne's disease. This article reports the final project results from the 11,772 animals from 87 herds that were tested for Johne's disease. A single bison herd submitted samples and the remainder of the results are broken down into beef and dairy samples.

Beef

7,158 beef animals from 52 herds were tested for Johne's disease. The 52 herds that submitted samples were from three regions—Peace River, Central and South Central. No beef samples were submitted from any other regions of the province. A herd is considered positive if at least one animal tested positive. The table below provides more information on the herds from the 3 regions that submitted samples for Johne's testing. Caution is required in comparing the Johne's disease levels between the regions because the number of herds in each is small, and the herds and animals were not randomly sampled.

Region	# of Animals Tested	# of Herds Tested	# of Herds Testing Johne's Positive	Average # of Samples per Herd
Peace River	2,224	17	6	131
Central	2,571	18	0	143
South Central	2,363	17	1	139

Among the 7 beef herds that tested positive for Johne's disease, the percentage of animals that tested positive was low. Typically, positive herds had 2% or less of their samples testing positive for Johne's disease. Among all 7,158 beef animals that were tested for Johne's disease, 18 were positive. Forty-one of the herds submitted samples from 4,106 animals for BVD testing. The testing detects animals persistently infected with BVD. All samples tested negative.

Dairy

4,565 dairy animals from 30 herds were tested for Johne's disease. The results from 2 herds that each submitted fewer than 10 samples are not included in this analysis. The samples from those 2 herds tested negative for Johne's disease. The table below provides more information on the 30 herds broken down by region. A herd is considered positive if at least one animal tested positive. Caution is required in comparing the Johne's disease levels between the regions because the number of herds in each is small and the herds and animals were not randomly sampled.

Region	# of Animals Tested	# of Herds Tested	# of Herds Testing Johne's Positive	Average # of Samples per Herd
Thompson/Okanagan	1,523	10	1	152
Fraser Valley	1,453	9	3	161
Vancouver Island	1,589	11	0	144

Among the 4 dairy herds that tested positive for Johne's disease, the percentage of animals that tested positive was low. Typically, positive herds had less than 2% of their samples testing positive for Johne's disease. Among all 4,565 dairy animals that were tested for Johne's disease, 5 were positive. However, Johne's testing is expected to underestimate both the number of herds positive and the number of animals positive within a herd. Twenty dairy herds submitted samples from 2,946 animals for BVD testing. The testing detects animals persistently infected with BVD. All dairy samples tested negative. The future of Johne's disease programs in North America is unclear. Beef focused programs are rare. Interest in dairy Johne's programs has waxed and waned over the decades. Interest in the US is currently waning. Producer supported Johne's programs exist in most other provinces; however, funding is typically short-term. A national dairy herd Johne's Disease status certification program is currently under discussion. For more information on the BC Johne's Disease project results, please contact Brian Radke at the BC Ministry of Agriculture, brian.radke@gov.bc.ca, 604-556-3066 or 1-877-877-2474.

Joining the Rat Race

by Dr. Jamie Rothenburger, Western College of Veterinary Medicine, University of Saskatchewan

Snap! The lid of my formalin jar seals and I complete my final rat autopsy. It's the end of July and for the last three months, I've been dissecting wild, urban rats to document their natural diseases.

Despite their remarkably close association with human habitats, scientists know relatively little about the diseases that rats carry and can transmit to people. As a wildlife species in its own right, no one has looked extensively at the burden of natural disease in rat populations.

Enter Dr. Chelsea Himsworth (WCVM '07), a PhD candidate at the University of British Columbia's School of Population and Public Health. Her ambitious research project, the Vancouver Rat Project, aims to better understand urban wild rats, their diseases and the frequency of human exposure to these diseases.

The rats of interest are black and Norway rats (*Rattus rattus and Rattus norvegicus* respectively) in Vancouver's notorious Downtown Eastside.

My role in this larger project is to characterize the rats' natural diseases. In May 2012, I arrived at the Animal Health Centre in Abbotsford, BC, where a freezer full of rats — all requiring autopsy and sample collection — greeted me.

At last count, 725 rats were trapped for this study and all have undergone dissection and sample collection. The work was conducted by Chelsea, her research assistant Victoria Chang (a student at the University of Guelph's Ontario Veterinary College) or me during the summer months.

Early on, we selected smaller rats that were younger and had far less natural disease. I was worried that signs of acute trauma were all I would find wrong with these furry rodents. But once we began examining the larger, older animals, all sorts of diseases became apparent and the challenging work began. These pathological findings will be the focus of my Master of Veterinary Science research project.

Each rat autopsy takes at least 45 minutes. Efficiency is crucial. After about the 50th rat, I had a system that minimized the number of times I switched hands on my instruments and how often I opened the formalin jar. I like to think of this as lean rat dissection. On my best rat day, the stars aligned and I did 10.

Dr. Jamie Rothenburger (seated) and Dr. Chelsea Himsworth examine one of the 725 rats that are part of the Vancouver Rat Project. Photo: Victoria Chang.

I vigorously brush each rat for fleas and lice, then take its picture. For the autopsy, I move to a bio-safety cabinet that's equipped with a filter system to minimize my exposure to viruses and bacteria. Only my hands and forearms enter the cabinet. As an extra precaution, I wear dedicated lab "scrubs" a disposable outer smock, a face mask, eye safety glasses and gloves.

The tail is the first part to go. Like a jockey flips his whip, I deftly turn my curved scissors and the cutting begins. I complete a full autopsy, evaluating all major organs for signs of disease. When I find an abnormality, I take photographs and extra samples. I delight in finding pockets of pus which is green in rats!

Tissue samples that are collected during the autopsy have to be trimmed into small pieces and then processed to make microscope slides. Once my role in the study's autopsy phase ended, I've begun the next phase: looking for microscopic signs of disease in hundreds of slides.

During the next year, the rat samples will be tested for several infectious pathogens carried by rats. Screening for leptospirosis, which causes Weil's syndrome in people, is already underway. Additionally, rats will be tested for antibiotic-resistant bacteria, Seoul hantavirus (a virus that causes hemorrhagic fever with renal syndrome) and *Streptobacillus monilliforme* that can lead to rat bite fever.

The sheer size of this study is unique. It's not often that hundreds of wild animals of the same species are subject to such rigorous disease testing. By studying the previously neglected wild rat in this way, I hope to shed new light on the natural diseases of this species and any implications this may have for human health.

Urban rats may be among the most scorned of mammal species, but I have found this research project to be remarkably interesting and rewarding. An unexpected side effect is the vast improvement of my short-term memory, gained from repeatedly copying the 11-digit rat ID number onto the 27 sample bags required for each rat.

Did I mention that there are 725 rats in this study?

Vancouver Rat Project in Numbers:

725 – Number of rats trapped from Vancouver's Downtown Eastside

50 – Average number of minutes it takes to complete a rat's autopsy

27 – Number of individual samples collected, bagged and labelled for each rat

25 – Number of samples collected per rat for microscopic examination

4 – Average number of microscope slides per rat

2 – Sets of gloves used per rat

10 – Number of doors that must be opened to enter or leave the secure lab autopsy area

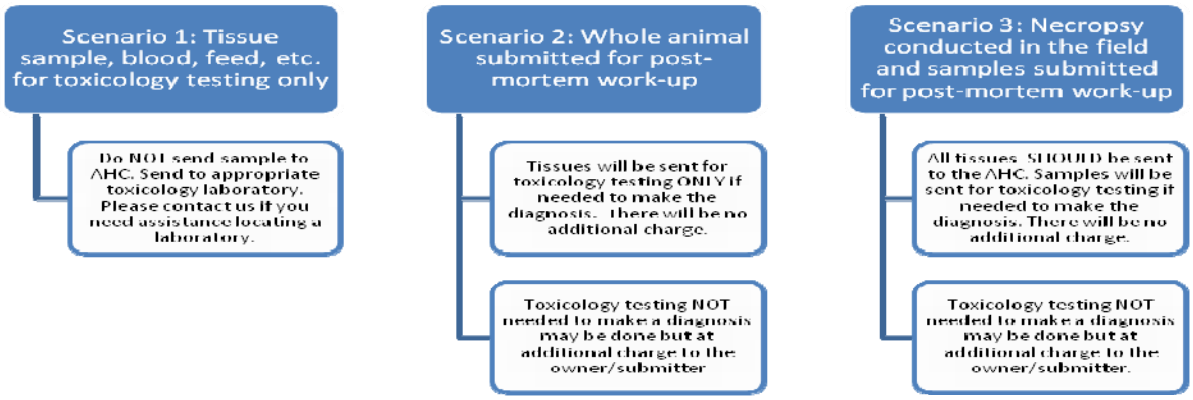
This article first appeared on www.wcvmtoday.com. Reprinted with permission.

Toxicology Testing at the Animal Health Centre

The toxicology laboratory at the Animal Health Centre (AHC) is now closed. This means that toxicology testing previously conducted by the AHC must now be undertaken elsewhere. We are still committed to excellence in disease diagnostics, and recognize that toxicology can play a vital role in reaching a diagnosis or understanding an animal health issue. For this reason, our pathologists have the option on necropsy-type cases to send samples for toxicology testing to outside laboratories.

The primary goal of the pathologist is to arrive at a diagnosis. When the pathologist decides that toxicology testing is necessary as part of the case work-up, there is no extra charge to the client. When this testing is not part of the pathologist's regular work-up on the case (i.e., the pathologist does not deem it necessary to achieve a diagnosis) then the client will be charged for all outside toxicology tests.

Please refer to the flow chart below for guidance as to which samples can be submitted to the AHC and how toxicology charges will be handled. Please contact the lab at 1-800-661-9903 should you have any questions.



Roger Pannett, Provincial Dairy Inspector, Livestock Health Management and Regulatory Unit, Plant and Animal Health Branch, Agriculture Science and Policy Division

Receives Queen Elizabeth II Diamond Jubilee Medal

The Honorable John Les, MLA for Chilliwack presented Roger Pannett with the Queen Elizabeth II Diamond Jubilee Medal on December 3, 2012.

Roger was one of 4 recipients receiving the award from the Honorable Mr. Les. He was nominated for this award based on his contributions to the community and the Province as the Chilliwack volunteer weather observer and for his service to the farming community as the Provincial Dairy Inspector.

The Diamond Jubilee Awards are a tribute to those Canadians who have made this country a more caring nation for all, helping others, giving back and going beyond the call of duty. Roger most certainly fulfills these requirements.

In 1988, acting on his great interest in Meteorology, he volunteered with Environment Canada as the Weather Observer for the Chilliwack area. Since that time, he has been reporting the daily weather conditions to Environment Canada.

Roger has served as a dairy inspector in the Province of British Columbia since 1986. Since 2001 he has held the sole responsibility for the inspection of the 540 registered dairy farms and 120 bulk tank milk graders in British Columbia. He works and travels throughout the entire Province providing technical support for resolving food safety and quality on-farm problems.

Roger acts as a reminder for every dairy producer that they are a food producer and that they need to think that way. He examines the equipment cleanliness, milk house cleanliness, cow cleanliness, milk handling and storage and antibiotic storage, to name a few of the areas he would inspect on each farm he visits. These areas carry the greatest impact on milk quality and compliance is essential. Roger is an enthusiastic resource to help correct or maintain excellent milk quality.

Infectious Laryngotracheitis (ILT) in the Fraser Valley

by Dr. Bill Cox, Poultry Health Veterinarian

Infectious Laryngotracheitis (ILT), a serious respiratory disease of chickens caused by a Herpesvirus, has in the past been seen sporadically in BC poultry. In 2006, however, there were significantly more cases reported than were seen in previous years. This marked the beginning of an annual occurrence of cases reaching epidemic proportions. A damaging epidemic of ILT was previously reported in BC poultry between 1971 and 1973, so this recent occurrence was of major concern to poultry farmers throughout the valley.

Typically, ILT occurs in the spring and summer of the year, through the early fall. The spread of the disease is assisted by hot, dry, and windy weather when virus-contaminated dust and feathers from infected flocks that are being moved or contaminated manure that is being spread can blow onto farms possibly several kilometres apart. At the same time, barn vents are wide open and fans are on full to increase ventilation for cooling the birds. This effectively draws the virus into the flock of susceptible birds. While the virus can also be spread by people or equipment moving from farm to farm, wind-borne distribution appears to be a significant contributor.

Figure 1 shows the annual reported number of cases of ILT and number of affected farms through 2010. The most serious outbreak occurred in 2009 when a total of 56 cases of ILT were reported affecting 50 farms; half of those cases were in broiler chickens. In mid-summer, poultry producers and their veterinarians met to collectively address the outbreak and develop mitigation strategies. Steps taken by the industry included enhanced biosecurity practices, well-planned transport routes, special manure handling practices, and vaccination. In 2009, a new vaccine, available only under permit in Canada, was used as one tool to help reduce the risk of ILT in vaccinated flocks of broiler chickens. This added measure appeared to have a very beneficial effect when it was observed that no vaccinated flocks developed disease.

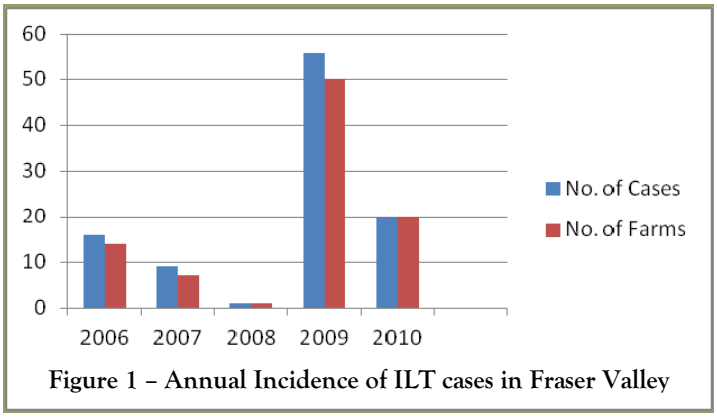


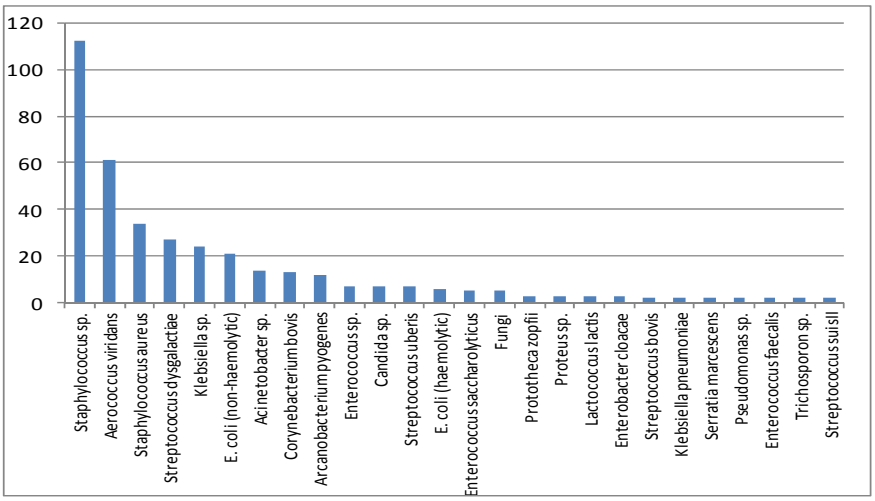
Figure 1 – Annual Incidence of ILT cases in Fraser Valley

In 2010, ILT appeared very early in the year, starting at the end of March. Control measures were implemented immediately and flocks of chickens at high risk were vaccinated. Subsequently, the incidence of ILT dropped significantly. During late March, April, and early May, a total of 12 cases were reported. Since May and through to the end of the year, only 7 cases were reported, most being sporadic and unrelated.

Since 2010, vaccination practices among all commercial chicken commodities were refined to take advantage of newer vaccines that did not allow spread of the infectious virus. Consequently, the incidence of ILT has dropped significantly and only sporadic cases were reported in 2011 (5 cases on 4 farms) and 2012 (3 cases). So far, it appears that cooperation among the poultry industry stakeholders and judicious vaccination planning has helped to relegate the status of ILT back to the sporadic state.

Mastitis Culture Results by Dr. Jane Pritchard

January 1-December 31, 2012 – Results of milk cultures sorted by frequency of isolation to a minimum of two times.
BC AGRI Animal Health Centre



* The following isolates were single occurrences during 2012 and not included in the chart above: Acinetobacter johnsonii, Aerococcus sp., Aeromonas hydrophila, Candida guillermondi, Chryseobacterium sp., Citrobacter sp., Corynebacterium jeikelum, Corynebacterium sp., Enterobacter sp., Enterococcus faecium, Helcoccus ovis, Klebsiella oxytoca, Lactobacillus sp., Lactococcus sp., Mannheimia haemolytica, Moraxella (M. osloensi), Pasteurella multocida, Pseudomonas aeruginosa, Pseudomonas fluorescens, Pseudomonas luteola, Pseudomonas putida, Serratia sp., Staphylococcus xylosus, Streptococcus agalactiae, Streptococcus sp.

Between January 1 and December 31, 2012, 596 milk samples (120 submissions) were received for culture and sensitivity at the Animal Health Centre. Out of the 596 samples submitted, no bacteria were isolated in 264 samples.

Resistance by Isolate										
	amp	kf	ob	e	xnl	p10	pyr	sxt	tet	# of isolates tested
Staphylococcus sp.	7%	0%	6%	4%	1%	9%	12%	1%	7%	112
Aerococcus viridans	0%	0%	21%	2%	0%	0%	8%	16%	21%	61
Staphylococcus aureus	24%	0%	0%	3%	0%	26%	9%	0%	6%	34
Klebsiella sp.	71%	8%	71%	71%	4%	71%	71%	0%	13%	24
Streptococcus dysgalactiae	0%	0%	0%	5%	0%	0%	0%	0%	33%	21
E. coli (non-haemolytic)	52.38%	33.33%	76.19%	76.19%	4.76%	76.19%	76.19%	19.05%	28.57%	21

amp – ampicillin	ob – cloxacillin	xnl – excenel	pyr – pirlimycin	sxt – sulfamethoxazole/trimethoprim
kf – cephalothin	e – erythromycin	p10 – penicillin	tet – tetracycline	

Case Study on Yeast Infection in Young Calves by Dr. Stephen Raverty

Three calves born January 2013 presented at 6, 12, and 18 days of age with similar clinical histories and pathologic findings. All three individuals presented in fair to moderate body condition with pronounced dehydration. In the two younger animals, there was pronounced distension of the bellies and on incision of the abdominal wall, there was marked enlargement of the rumens. In all 3 animals, the rumens contained 3-4 litres of turbid and foul smelling grey white fluid. The lining of the rumens in all 3 animals was thickened, dull yellow white and similar to clotted milk. In all 3 animals, microscopic review of the rumen disclosed marked thickening of the superficial layer of the lining of the rumen with numerous yeast and pseudohyphae occasionally admixed with blood, pus and protein exudate.

Fungal culture of the 2 younger calves yielded heavy growth of Candida spp and Candida albicans with variable numbers of Clostridium spp, Escherichia coli and Enterococcus spp bacteria, considered secondary invaders or opportunists. These yeast typically colonize the oral cavity and reproductive tracts of young animals at the time of birth and in healthy animals, do not result in clinical disease. In those animals that are debilitated or immunosuppressed, localized proliferation and deeper tissue invasion may occur. In this case, inappropriate feeding regimes may have inadvertently introduced milk into the rumen with secondary decomposition and yeast proliferation. Tissue culture for bovine viral diarrhea proved negative and there were no apparent predisposing lesions in the examined tissues. Should this condition occur on the farm, consultation with your clinician and follow up review of perinatal management and in particular feeding practices may be indicated.

The Ministry of Agriculture was represented by staff from the Plant and Animal Health Branch, Food Protection Branch, and the Sustainable Agriculture Management Branch, at the 15th Annual Pacific Agriculture Show. The 3-day event was attended by several thousand visitors and there were 265 exhibitor booths.

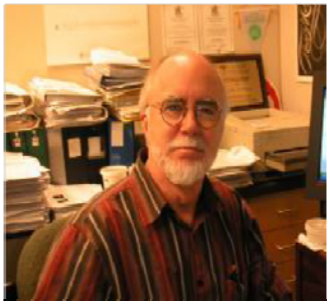
Pictured above, Ministry booth organizers/volunteers from left to right: Maria Jeffries, Plant Health; Erin Zabek, Animal Health; Elsie Friesen, Food Protection; and Mark Raymond, Sustainable Agriculture Management Branch.

Pacific Agriculture Show

January 24-26, 2013 in Abbotsford

Pictured above, Ministry staff volunteers Jane Pritchard, Livestock Health Management and Regulatory Unit on the far left, and Mark Raymond, Sustainable Agriculture Management on the right side.

Dr. John Robinson is Retiring



After 38 years of service, Dr. John Robinson (or Dr. R or JR) as he is called) is retiring from the British Columbia Ministry of Agriculture's Animal Health Centre.

Dr. R earned his DVM at Washington State University in 1968; then went onto graduate work at the University of Wisconsin-Madison to finish his M.S. and Ph.D. degrees in Veterinary Virology in 1973, with his research work concentrated on Avian Influenza viruses. Upon graduation, he accepted a position at Oregon State University (OSU) as an Assistant Professor in avian veterinary research.

Following a year of work at OSU, he discovered his interests greatly broadened in the area of diagnostic virology and it was about that time that a position became available at the Veterinary Laboratory in British Columbia, Canada.

The combination of his chance to work on virus diagnostics in all sorts of animals and his fascination with beautiful British Columbia (having made two vacation trips there previously), helped clinch the job, and on November 4, 1974 he came to work as Veterinary Diagnostic Virologist for the Ministry of Agriculture. John's outside interests include keeping track of his three sons, their families, and his grandchildren (of which he is hoping more will arrive soon). When asked what he plans on doing first after retirement, he claims he may well spend a year just sitting on his sofa while he tries to decide just exactly what was he doing for the last 38 years!

After that, he hopes to make a culinary expedition to a number of countries in Southeast Asia to partake of their famous 'street food'. Upon return home to Chilliwack, British Columbia, he plans on ardently pursuing his hobby of "Extreme Cooking".

Dr. Paul Kitching has Retired

After four years as British Columbia's Chief Veterinary Officer, Dr. Paul Kitching has retired. The Province, Ministry and all of his colleagues thank him for his service and wish him the best in his future endeavors. Paul contributed to the Province's Animal Health Laboratory becoming internationally recognized for its expertise, equipment and diagnostic facilities and led our strong team of dedicated and experienced veterinarians, lab technicians and other professionals in their work.

Prior to joining the Ministry of Agriculture, Paul worked for the Canadian Food Inspection Agency, as well as the World Reference Laboratory for Foot and Mouth Disease in the United Kingdom. Dr. Jane Pritchard has assumed all of Dr. Kitching's responsibilities and been appointed BC's interim Chief Veterinary Officer.

BRITISH COLUMBIA Ministry of Agriculture

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http://www.agf.gov.bc.ca/ahc/AHMonitor/index.html

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